

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Inventor: Mark S. Schaefer

Title: METHOD AND SYSTEM FOR VEHICLE
SOFTWARE CONFIGURATION UPDATE
MANAGEMENT

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APPEAL BRIEF

Board of Patent Appeals and Interference
US Patent and Trademark Office
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

The Appellant is currently appealing the rejections made in the Final Office Action dated October 19, 2007. In that Office Action, claims 28-48 were rejected under 35 U.S.C. §102(e). The Appellant respectfully traverses and appeals that rejection.

(i) Real Party in Interest

The real party in interest is the assignee of the Appellant who assigned all of his right, title and interest to General Motors Corporation, a Michigan corporation, having its principal place of business at 300 Renaissance Center, Detroit, Michigan 48265-3000.

(ii) Related Appeals and Interferences

There are no other appeals and/or interferences known to the Appellant, his assignee, and/or legal representatives that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

(iii) Status of Claims

In the Final Office Action, claims 28-48 were rejected under 35 U.S.C. §102(e). Claims 1-27 have previously been cancelled. The application does not contain any other claims. This appeal covers the rejections of claims 28-48.

(iv) Status of Amendments

No amendment to the claims has been entered subsequent to the Final Office Action.

(v) Summary of Claimed Subject Matter**Independent Claim 28 –**

Independent claim 28 is directed to a method for managing a software configuration update of a vehicle. The method includes identifying an updated version of a first software module for a first electronic module on the vehicle (Fig. 3, Block 320; Page 11, Lines 10-12); obtaining vehicle configuration data representative of a current software configuration on the vehicle, wherein the vehicle configuration data includes the versions of software modules currently installed in electronic modules connected to the vehicle telematics unit over a vehicle communication bus, and the vehicle configuration data identifies interdependencies between the software modules (Fig. 1, Blocks 112, 114, 116, and 120; Page 9, Lines 11-18); determining whether the updated version of the first software module is compatible with the current software configuration (Fig. 3, Block 330; Page 9, Line 26-Page 10, Line 1); and updating the first software module with the updated version by transferring the updated version of the first software module from the vehicle telematics unit to memory of the first electronic module via the communication bus if it is determined that the updated version of the first software module is compatible with the current software configuration (Fig. 3, Block 350; Page 13, Lines 8-10 and 13-15).

Independent Claim 36 –

Independent claim 36 is directed to a method for managing a software configuration update of a vehicle. The method involves the steps of identifying an updated version of a first software module available for installation in a first electronic module on the vehicle, wherein a previous version of the first software module is installed in the first electronic module on the vehicle (Fig. 3, Block 320; Page 11, Lines 10-13), obtaining the versions of one or more other software modules installed in one or more electronic modules on the vehicle (Fig. 3, Block 325; Page 9, Lines 15-17), identifying interdependencies between the updated version of the first software module and the one or more other software modules (Fig. 3, Block 330; Page 9, Lines 15-18), determining at the call center whether the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules (Fig. 2, Block 181; Page 12, Lines 1-5), and updating the first software module by transferring the

updated version of the first software module from a vehicle telematics unit to the first electronic module via a communication bus if it is determined that the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules (Fig. 3, Block 350; Page 13, Lines 9-10 and 13-15).

Independent Claim 44 –

Independent claim 44 is directed to a method for managing a software configuration update of a vehicle. The method comprises detecting at a vehicle telematics unit that a software module in an electronic module has been modified (Page 10, Lines 8-9), determining whether the modified software module is compatible with versions of other software modules currently installed on the vehicle, wherein the other software modules have interdependencies with the modified software module (Fig. 3, Block 330; Page 10, Lines 11-13); and if the modified software module is not determined to be compatible with the other interdependent software modules, replacing the version of at least one of the interdependent software modules so that the interdependent software modules are compatible with one another (Fig. 3, Block 350; Page 10, Lines 13-17).

Although the Appellants have provided the summary of claimed subject matter with references to specific embodiments of the invention to comply with the requirements set forth in the relevant provisions of 37 C.F.R., this summary has been provided to aid the Board in evaluating the appeal and is not intended to limit the meaning or definition of any terms in the claims. Furthermore, it should be appreciated that the above-provided reference numerals and pages/line numbers are only for exemplary purposes, as other instances and/or embodiments of the claimed elements could appear elsewhere in the application.

(vi) Grounds of Rejection to be Reviewed on Appeal

The sole issue on appeal is whether claims 28-48 are unpatentable under 35 U.S.C. §102(e) as being anticipated by Kincaid (U.S. Patent Publication No. 2004/0117785).

(vii) Argument**Claims 28-44**

Claims 28-44 stand rejected under 35 U.S.C. §102(e) as being anticipated by Kincaid. This rejection is respectfully traversed for at least the following reasons: 1) the Kincaid publication fails to disclose “an electronic module on a vehicle” as disclosed by Appellant; and 2) the Kincaid publication also fails to disclose electronic modules connected to a vehicle telematics unit over a vehicle communication bus as disclosed by Appellant. It is worthwhile mentioning that independent claims 36 and 44 were rejected under the same rationale as claim 28. In the rejection of claims 36 and 44, the Examiner repeats the analysis set forth for the rejection of claim 28 and mentions that claim 36 has the same functionality as claim 28 while claim 44 is a broader version of claim 28.¹ While Appellant’s arguments relating to claim 28 apply to the rejections of claims 36 and 44, it is worthwhile noting that claims 36 and 44 contain different limitations than claim 28.

1) Claims 28, 36, and 44 – Kincaid Fails to Disclose an “Electronic Module on a Vehicle”

Kincaid fails to disclose a vehicle, much less an electronic module on a vehicle as disclosed by Appellant’s claims. As set forth in MPEP §2131 and the relevant case law, to anticipate a claim under § 102, each and every element as set forth in the claim must be found, either expressly or inherently, in a single prior art reference. The Examiner addresses Appellant’s step of identifying an updated version of a first software module for a first electronic module on the vehicle by pointing to Kincaid’s version identifier and a component/newer component/current version stored in a remote server.² But the Examiner fails to demonstrate that Kincaid discloses each and every element of Appellant’s claims. In particular, the Examiner failed to establish any disclosure, explicit or otherwise, provided by Kincaid where Kincaid’s component download manager for a wireless mobile station functions in conjunction with vehicle hardware transmitting and receiving voice and data communications.

¹ Final Office Action, October 19, 2007, pages 6 and 8.

² Final Office Action, page 3.

While in one section of the Final Office Action, the Examiner points to the download module (DLM) space 263 as disclosing a first electronic module, Kincaid's download module (DLM) space 263 cannot reasonably be interpreted as disclosing Appellant's claim element because the DLM space 263 functions as storage space in memory 260 for storing DLMs 310, 320, 330, and 340.³ More specifically, Kincaid discloses the use of a wireless mobile station 111 that includes an antenna 205, radio frequency (RF) transceiver 210, transmit (TX) processing circuitry 215, microphone 220, and receive (RX) processing circuitry.⁴ The mobile station 111 also includes memory 260 that further comprises a basic operating system (OS) program 261, download control program 262, and download module (DLM) space 263.⁵ Each mobile station also includes a download module (DLM) manager that provides centralized management of all software components that are installed in the mobile station.⁶ Kincaid's download module (DLM) space 263 stores a plurality of download modules (DLMs). In other words, the download module (DLM) space 263 is carried by the wireless device 111 and functions to store software on the wireless device 111.⁷ Conversely, Appellant discloses electronic modules, such as vehicle control modules 114 and vehicle sensors 116, on a vehicle.⁸ Examples of these modules are disclosed as engine control modules and brake control modules. Appellant's modules relate to the functioning of a vehicle and are not merely memory for storing software on a wireless device. Kincaid's general disclosure of hardware fails to disclose a vehicle electronic module as claimed by Appellant, such as an engine control module or brake control module. While Kincaid does use the term "module," this use describes software components that are installed on a mobile station.

2) Claims 28, 36 and 44 – Kincaid Fails to Disclose “Electronic Modules Connected to a Vehicle Telematics Unit Over a Vehicle Communication Bus”

Not only does Kincaid fail to disclose vehicle electronic modules, but Kincaid also fails to disclose such modules connected to a vehicle telematics unit over a vehicle communication bus. The Examiner simply references Kincaid's Figures 3 and 4 and notes the term

³ Kincaid, U.S. Patent Publication 2004/0117785, paragraph 47.

⁴ Kincaid, paragraph 37.

⁵ Kincaid, paragraph 37.

⁶ Kincaid, paragraph 36.

⁷ Kincaid, paragraph 47.

⁸ Appellant's application, page 7, lines 16-24.

“interdependent.”⁹ Figure 3 identifies a detailed view of a download module (DLM) space 263 while Figure 4 discloses a DLM manager program 270 selecting at least one component in a DLM to be upgraded and determines any interdependencies, if any. But the steps outlined in Figure 4 occur entirely within the wireless device 111, as can be appreciated by the segmented line surrounding the steps by the reference number 111. The download module (DLM) space 263 and the method involving the DLM manager program 270 provided in both Figures 3 and 4 are generally identified in the block diagram of the wireless device 111 shown in Figure 2. Referring to the aforementioned Figures, Kincaid only discloses sending software within the wireless device 111 and not from a telematics unit over a vehicle communication bus to a first electronic module. Differently put, Kincaid discloses communication inside a wireless device while Appellant discloses sending software outside of a telematics unit over a bus to an electronic module external from the telematics unit. This interpretation is reinforced in the Final Office Action when the Examiner equates Appellant’s vehicle communication bus to Kincaid’s wire/interconnection of wireless device 111. Kincaid’s disclosure involves a mobile station wirelessly receiving software files using a wireless communication network.¹⁰ The wireless device 111 contains memory 260 for storing a variety of software components in a plurality of download modules (DLM) 310, 320, 330, and 340. As shown in Figure 2, the memory 260 is carried on the wireless device 111. While not specifically disclosed, the Examiner notes that the wireless device 111 uses wire or interconnection and the Examiner argues that this interconnection is equivalent to Appellant’s vehicle communication bus. But Kincaid’s arrangement fails to disclose Appellant’s method. As noted above, Appellant’s vehicle control modules 114 are communicatively connected to a telematics unit 120 via a communication bus 112. Both the bus 112 and the modules 114, 116 are separate from the telematics unit 120. Appellant’s arrangement can be better appreciated in Figure 1 of Appellant’s application. Furthermore, the telematics unit 120 is a self-contained unit using in-vehicle memory 128 separate from the memory of the modules 114, 116.¹¹ But the telematics unit 120 does not save the received software in memory 128, rather it sends the software over the vehicle communication bus 112 to control modules 114 and 116 that include memory separate from the telematics unit 120, namely module memory 132. Kincaid fails to disclose this arrangement.

⁹ Final Office Action, page 3.

¹⁰ Kincaid, paragraph 8.

¹¹ Appellant’s application, page 7, lines 4-5.

Accordingly, in light of the above arguments, the disclosure of Kincaid fails to anticipate the elements of Appellant's claims.

Conclusion

In view of the foregoing, the Appellants request that the rejections of all claims be overturned and the claims be held allowable.

The Commissioner is authorized to charge any fees, or refund any overpayments, associated with this Appeal Brief to Deposit Account No. 07-0960.

Respectfully submitted,

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(viii) Claims Appendix

1-27. (Cancelled)

28. A method for managing a software configuration update of a vehicle, the method comprising the steps of:

identifying an updated version of a first software module for a first electronic module on the vehicle;

obtaining vehicle configuration data representative of a current software configuration on the vehicle, wherein the vehicle configuration data includes the versions of software modules currently installed in electronic modules connected to the vehicle telematics unit over a vehicle communication bus, and the vehicle configuration data identifies interdependencies between the software modules;

determining whether the updated version of the first software module is compatible with the current software configuration; and

updating the first software module with the updated version by transferring the updated version of the first software module from the vehicle telematics unit to memory of the first electronic module via the communication bus if it is determined that the updated version of the first software module is compatible with the current software configuration.

29. The method of claim 28, wherein the obtaining step further comprises retrieving the vehicle configuration data from a call center and the determining step further comprises determining at the call center whether the updated version of the first software module is compatible with the current software configuration.

30. The method of claim 28, wherein the obtaining step further comprises obtaining the versions of the software modules currently installed in one or more electronic modules connected to the vehicle telematics unit over a vehicle communication bus by interrogating the one or more electronic modules via the vehicle telematics unit.

31. The method of claim 30, further comprising the step of:

providing the obtained versions of the software modules currently installed to the call center; and

wherein the determining step further comprises determining at the call center whether the updated version of the first software module is compatible with the current software configuration.

32. The method of claim 30, wherein the obtaining step further comprises obtaining the interdependencies between the software modules from the call center, and the determining step further comprises determining at the vehicle telematics unit whether the updated version of the first software module is compatible with the current software configuration.

33. The method of claim 28, wherein, if it is determined that the updated version of the first software module is not compatible with the current software configuration, then the method further comprises the step of replacing at least one of the other interdependent software modules with a version of the at least one other interdependent software module that is compatible with the updated version of the first software module.

34. The method of claim 33, further comprising the steps of:
determining which of the other interdependent software modules conflicts with the updated version of the first software module; and
determining whether the conflicting software modules have a version available that is compatible with the updated version of the first software module.

35. The method of claim 27, further comprising the step of issuing a software request to the call center for the updated version of the first software module.

36. A method for managing a software configuration update of a vehicle, the method comprising the steps of:
identifying an updated version of a first software module available for installation in a first electronic module on the vehicle, wherein a previous version of the first software module is installed in the first electronic module on the vehicle;

obtaining the versions of one or more other software modules installed in one or more electronic modules on the vehicle;

identifying interdependencies between the updated version of the first software module and the one or more other software modules;

determining at the call center whether the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules; and

updating the first software module by transferring the updated version of the first software module from a vehicle telematics unit to the first electronic module via a communication bus if it is determined that the updated version of the first software module is compatible with the obtained versions of the one or more other installed software modules.

37. The method of claim 36, wherein the step of identifying interdependencies further comprises retrieving vehicle configuration data from the call center, wherein the vehicle configuration data identifies interdependencies between the updated version of the first software module and one or more other software modules installed in the one or more electronic modules on the vehicle.

38. The method of claim 36, wherein the obtaining step further comprises obtaining the versions of the one or more other software modules by interrogating one or more electronic modules installed with the one or more other software modules; and

wherein the electronic modules are interrogated by the vehicle telematics unit over the vehicle communications bus for the versions of the one or more other software modules installed in the one or more electronic modules.

39. **(New)** The method of claim 36, wherein the identifying interdependencies step further comprises identifying, at the call center, interdependencies between the updated version of the first software module and one or more other software modules installed in one or more of the electronic modules.

40. The method of claim 36, wherein, if it is determined that the updated version of the first software module is not compatible with the obtained versions of the one or more other installed

software modules, then the method further comprises the step of replacing at least one of the other installed software modules with a version of the at least one other installed software module that is compatible with the updated version of the first software module.

41. The method of claim 40, further comprising the steps of:

determining which of the obtained versions of the one or more other installed software modules conflicts with the updated version of the first software module; and

determining whether the conflicting software modules have a version available that is compatible with the updated version of the first software module.

42. **(New)** The method of claim 36, wherein the step of identifying an updated version further comprises receiving a notification at the vehicle telematics unit from the call center that the updated version of the first software module is available for installation in the first electronic module on the vehicle.

43. The method of claim 36, wherein the step of identifying an updated version further comprises issuing a software request for each software module installed in the one or more electronic modules on the vehicle on a periodic basis and determining whether the latest versions of the software modules are installed on the vehicle.

44. A method for managing a software configuration update of a vehicle, the method comprising the steps of:

detecting at a vehicle telematics unit that a software module in an electronic module has been modified;

determining whether the modified software module is compatible with versions of other software modules currently installed on the vehicle, wherein the other software modules have interdependencies with the modified software module; and

if the modified software module is not determined to be compatible with the other interdependent software modules, replacing the version of at least one of the interdependent software modules so that the interdependent software modules are compatible with one another.

45. **(New)** The method of claim 44, wherein the replacing step further comprises replacing the modified software module with a previous version of the modified software module that is compatible with the versions of the other interdependent software modules.

46. The method of claim 44, wherein the replacing step further comprises replacing the version of at least one of the other interdependent software modules with a version that is compatible with the modified software module.

47. The method of claim 44, wherein, if the modified software module is determined to not be compatible with the versions of the other interdependent software modules currently installed on the vehicle, then the method further comprises the step of determining whether any versions of the other interdependent software modules are available that are compatible with the modified software module; and, if so,

then the replacing step further comprises replacing the version of at least one other interdependent software module currently installed on the vehicle with the available compatible version.

48. The method of claim 44, further comprising the step of issuing a software flag to the call center in response to detecting that a software module on a electronic module has been modified.

(ix) Evidence Appendix

None.

(x) Related Proceedings Appendix

None.